

Comparing the calcium bioavailability from two types of nano-sized enriched milk using in-vivo assay

ABSTRACT

Calcium bioavailability from two types of enriched (calcium citrate and calcium carbonate) milks homogenized to a nano-sized particle distribution has been studied among 48 female Sprague-dawley rats. Skim milk powder was enriched with some essential nutrients (Inulin, DHA & EPA, vitamins B6, K1, and D3) as enhancers of calcium bioavailability according to recommended dietary allowances of the West European and North American. Ovariectomized and ovariectomized-osteoporosis rats were used as a menopause and menopause-osteoporosis model, respectively. Although, nano-sized enriched milk powders had the greatest calcium bioavailability among the groups, but bioavailability of nano-sized calcium carbonate-enriched-milk was significantly ($P<0.05$) better than nano-sized calcium citrate-enriched-milk. Moreover, the trends were similar for bone calcium, strength and morphology. Therefore, based on the current results the calcium carbonate nano-sized enriched milk could be an effective enriched milk powder in ovariectomized-osteoporosis and ovariectomized rats as a model of menopause-osteoporosis and menopause women.

Keyword: Calcium; Enrichment; Nano-particle; Prebiotic; Vitamin